REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claim 1 is pending in the application.

Discussion of Amendments to the Claim

Claim 1 has been amended in order to address the issues raised in items 4-6 of the Official Action, to correct spelling/typing errors, to refer to the various colored solutions as being liquors, as suggested by the examiner and as used in the art, and to clarify claim 1 to address and adopt the examiner's suggestions on page 3, second paragraph and rearrange step (g) responsive to the comments in the third paragraph of page 3.

Similar changes with respect to spelling have been made to the specification responsive to item 3 of the Official Action.

It is submitted that the claim is now fully compliant with 35 USC §112, first and second paragraphs. Should the examiner have any questions or have concerns, please contact the undersigned to resolve them.

The balance of the Official Action relates to a single prior art-based rejection of claim 1 based upon Handbook of Smook in view of a machine translation of a published Japanese application of Kawano[1] and U.S. patent 5,616,280 to Moore et al. Before considering these documents, both individually and collectively, it is important to remember applicants' contribution to the art.

The present invention includes the following important features:

(G) a potassium ion removal step of flowing an aqueous solution containing the ashes captured and recovered from the combustion exhaust gas generated in the black liquor solution combustion step (E) by the dust collector through a packed bed filled with a Na-type cation exchange resin to adsorb and remove potassium ions contained in the aqueous solution; and

(H) a regeneration step of treating the cation exchange resin used in the potassium ion removal step (G) with aqueous sodium hydroxide solution to regenerate the cation exchange resin.

The fraction recovered from the potassium ion removal step (G), which contains a large amount of sodium sulfate and sodium carbonate, is recycled to the black liquor solution

[1] The Official Action identifies the reference as KONO. In fact the correct name is Hirio KAWANO one of the joint inventors of the subject application.

concentration step (D), and a sodium hydroxide effluent recovered from the regeneration step (H) is recycled to the bleaching step (C).

In the regeneration step (H) of the present invention, the cation exchange resin is treated with aqueous sodium hydroxide solution.

The present invention provides a process for producing kraft pulp which is capable of recovering chemicals in a closed system thereby preventing, in particular, accumulation of potassium impurities and effectively utilizing chemicals used in the process.

Turning now to the reasoning/argument underlying the rejection, applicants believe that the Kawano reference has not been properly considered as to correct text and that the combination of references is inappropriate and therefore should be withdrawn.

The examiner examines claim 1 by relying upon a machine English translation of Kawano et al (JP A-2002-138382). Applicants[2] have found the machine English translation to be inaccurate. The correct translation of paragraph [0023] of JP A-2002-138382 is as follows:

> [0023]
>
> The usual ionic exchange tower is used for formation of a packed bed of cation exchange resin like the above. Space velocity of the flowing of the fluid is usually 1 to 10 hr^{-1} in any cases of fluids of solution containing the captured ashes or the solution of the fraction containing a large amount of sulfate ion and carbonate ion recovered in the chlorine ion separating step. There is no problem when the temperature at the flowing of the fluid is 80°C or lower and the temperature is usually 20 to 60°C. When the fluid is continuously flowed under the above conditions, leakage of potassium ions from the column is soon initiated. At that time, the flowing of the fluid through the column is stopped. Next, as the regeneration material, salt water is flowed. Thereby, the regeneration of strong acidic ion-exchange resin adsorbing potassium to Na-type thereof is conducted. By repeating the above operation, potassium ion can be continuously removed therefrom. Incidentally, as the above regeneration, there may be used a method in which after flowing of the fluid of acid (for

[2] Mr. Kawano is one of the inventors herein.

example aqueous sulfuric acid), aqueous caustic soda or salt water is flowed thereto. (Emphasis added).

Therefore, in Kawano, in order to regenerate the ion-exchange resin, it is necessary to treat the resin with salt water or an acid. If using aqueous caustic soda, it is required to treat the resin with acid such as sulfuric acid prior to treating with aqueous caustic soda. More specifically, Kawano provides no description or suggestion of directly treating the ion-exchange resin with caustic soda to regenerate the exchange resin.

If the regeneration method according to Kawano is used, potassium ion is present in salt water or acid (such as sulfuric acid).

The examiner argues that Kawano's regeneration process can be combined with Smook. However, if combined, it would still be necessary to treat the salt water or acid containing potassium ion and in doing this it is difficult to attain the "closed system" and effectively utilize chemicals used in the process according to the present invention.

Moore describes that in pulp bleaching sodium hydroxide and potassium hydroxide can both be used for bleaching. It is then asserted that it is "obvious" for one of ordinary skill in the art to combine the inventions of Kawano and Moore to Smook. Applicants disagree.

However, even if these three references are combined (applicants dispute that they can), it is still not possible to reach the present invention since Kawano clearly teaches that in order to regenerate the ion-exchange resin, it is necessary to treat the resin with salt water or acid. If aqueous caustic soda is used, it is required to rat the resin with an acid such as sulfuric acid prior to treating with aqueous caustic soda. Namely, in Kawano, there is no description nor suggestion of directly treating the ion-exchange resin with caustic soda for regeneration of the exchange resin. As explained above, if Kawano's regeneration process is combined with both Smook and Moore, it is required to treat the salt water or acid containing potassium ion generated n the regeneration step and due to this constraint it is difficult to attain the "closed system" of the present invention and effectively utilizing chemicals used in the process according to the present invention.

For the above reasons it is respectfully submitted that the claim of this application define inventive subject matter. Reconsideration and allowance are solicited. Should the examiner require further information, please contact the undersigned.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____
Arthur R. Crawford
Reg. No. 25,327

ARC:eaw
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100